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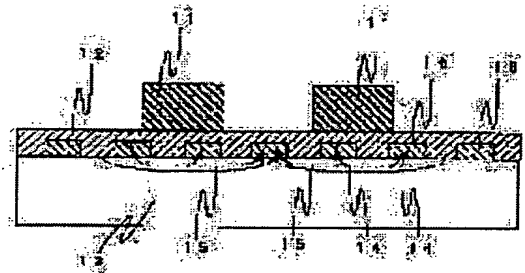
(54) SEMICONDUCTOR DEVICE

(57)Abstract:

PURPOSE: To prevent increase of high frequency power loss which is caused by inversion layer generation, by forming a layer having charge trapping level, in a part below the wiring or at least a part of the periphery, out of the interface between a high resistance Si substrate and a surface insulating film.

CONSTITUTION: On a high resistance silicon layer 13, a surface insulating film 12 is formed, and thereon a wiring 11 is formed. A silicon layer 16 having charge trapping level is formed, on the interface between the silicon substrate 13 below at least the wiring 11 or of the peripheral part and the surface insulating film 12. The Si layer 16 has charge trapping level whose density is at least $1 \times 10^{16} \text{cm}^{-3}$, and is a polycrystalline Si film or an amorphous Si film, which are impurity containing layers formed by implanting ions into the Si substrate 13.

Thereby, inversion layers, i.e., mobile charges are not generated, and the loss of a transmission line and the Q value of a planar inductor which are almost the same as those of a semiinsulating GaAs substrate can be obtained, so that a semiconductor device suitable for high frequency can be realized.



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